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HORSE AND MAN

Courtesy of American Museum of Natural History

WHAT DO YOU KNOW ABOUT YOURSELF?

Man's Complete History

By George A. Dorsey

THE exact spot where Man was born is not known. There are two versions as to the date of his birth. One—the Mosaic, as interpreted in 1654 by Bishop John Lightfoot—says that "Man was created by the Trinity on October 23, 4004 B. C., at nine o'clock in the morning." The other—the Book of Nature — estimates Man's birth at 80,000,000 B. C.

George A. Dorsey

Moses wrote the Book of Genesis about 1500 B. C. God began the Book of Nature at the Beginning of Eternity; it will be finished at the End.

Man at first was so small he could play hide-and-seek in a needle's eye. His name was Bacterium. He was the only living thing. Land and sea were not yet fit for other life—there was no food to live on. It was Bacterium's job to make the world fit. For eons he plugged away, turning rock into soil.

The little Algae, half-brothers to Bacterium, helped mightily, turning sunshine into food.

The pyramid of life had begun.

Other chemical elements were taken up into the little bodies. More millions of years and inconceivable labor. Real protoplasm came to be.

Meanwhile the earth had doubled in size and was now fit to live on. Man was now a real cell. He could move about, could multiply. He could make more protoplasm—living matter, food.

We think we work. In five years one pair of one-celled organisms could produce 10,000 food-balls, each the size of this earth.

Even then Man was a better engine than he has ever made; he could stoke, repair, adjust, increase and preserve himself. He was more wonderful than the sun—the sun cannot reproduce itself. Man could, even when he was only one-cell big—and at that so small that billions of him could hide in a thimble.

Many cells organized to make a body. This could distribute its work, save up for a rainy day; part could rest while other parts worked. An epoch-making step.

Marvelous progress from now on. Tryings on of many bodies. Tryings out of new foods, new ways to get food, new safety devices, new ways to avoid death. Innumerable failures. But, in general, progress.

From round—like a Jellyfish—Man became long—like a Worm. He could tell right from left now, and his head from his tail. A big step—especially when he sprouted legs. He could go on journeys. He had blood cells to get oxygen. Muscles. Alimentary canal. Eyes to see with.

Another epoch—about twenty million years ago: Man became a Fish. Jaws, gills, fins, scales. He began to grow a skeleton—at first a mere gristle shell to protect his tiny brain. His skull today has not forgotten its origin.

Then Man started for dry land. Developed lungs. Changed fins into fingers and toes. A great step forward. His name was Amphibian. He liked himself so well he sang a song, the first vocal music this earth ever heard. Even today Mrs. Frog cannot find her mate unless he croaks.

Man learned to love the sun: he became a Reptile. Ten million years ago. He had a big brain, a four-chambered heart, warm blood. He could breathe through his shell.

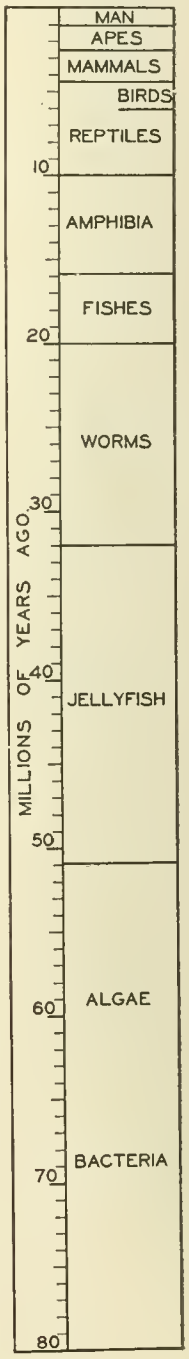
Man lost part of his family here, certain Reptiles took to the air and became Birds. Not Man himself. He stayed on the ground and perfected an incubator for his eggs and built it inside his body so he could carry it with him. He developed milk and called himself Mammal. He tried out several types of bodies, kinds of teeth, and methods of locomotion.

But the Eagle had a more perfect body, keener vision, and better circulation; it could travel faster and instead of coarse hair had fine feathers. Man decided he would fly. His body was too heavy; he could only carry it to the tree-tops. He decided to stay there and be a Primate.

Man now had the time of his life. But he was top-heavy; he had more brains than he could use in a tree. So he climbed down, left off his tail, began to straighten up, and change his name to ape. That was two or three million years ago.

He shortened his arms, lengthened his legs, straightened up, balanced his head; became Man. That was probably one million years ago.

Our Pedigree



(*Another article by Dr. Dorsey in next issue of* Evolution)

Man and Nature

By ALEXANDER GOLDENWEISER

SOME two generations ago Huxley startled the world by his little masterpiece, "Man's Place in Nature." What was heresy then, has since become a commonplace, except, perhaps, in Tennessee.

ALEXANDER GOLDENWEISER

Now, Huxley as a biologist was primarily interested in the relation between man physical and the higher animals, especially the anthropoid apes. We need not accept this limitation. Our topic then will be man's place in nature viewed from the standpoints of physics, chemistry, biology and psychology.

Man, first of all, is a thing, a physical object subject to physical world and laws that control it. Man has weight, volume, size. His body has a certain temperature. It expands in heat, contracts from cold. The muscles of the body exert certain pulls on the bones, the bones themselves articulate with each other like the parts of a machine. When a man falls from a rock into a precipice, he falls like a stone falls in strict conformity to the law of falling bodies. Whatever else man may be, then, he is first a physical object.

But beyond this man is also a chemical composite, a highly complex one. Not only are the different components of the body—the blood, bones, glands, bile, urine—expressible in chemical forms, but the functioning of the organism consists largely of chemical processes, such as breathing, digestion, vision, cell metabolism. The body of man is like a huge laboratory in which chemical substances are constantly being formed and destroyed. So, man is a chemical composite.

But man is more than this: he is a living organism. Like plants and animals, he has life. In common with plants, he is composed of living cells, he originates from a cell, he grows transforming organic and inorganic substances into constituent parts of his own body, he ages and he dies. In many ways, man is like a plant.

Beyond this, he is even more like an animal. He is born from the parent organism after a protracted embryonic period spent inside the maternal body, as is the case with many animals. Like all animals, he has the power of spontaneous motion. Like all animals, he has certain instincts—more complicated native dispositions than are the reflexes or tropisms of plants—which guide him in the quest for food or sex and in avoiding dangers. Like all higher animals, man has sense organs which facilitate his orientation in the world about him. Like all vertebrates he has a spinal column around which his skeleton is built. And, like all higher animals, he has a nervous system and brain which make his reactions to external and internal stimuli much more accurate and effective and versatile than they could otherwise be. Man, moreover, is a mammal; he brings live offspring into the world, as do tigers, lions, elephants, whales, horses, dogs and pigs. The young are fed at the mother's breasts as among all the mammals.

Man, finally, is like a monkey and especially like an anthropoid ape. His skeleton, the formation of his skull and of the external sense organs on the head, are more like those of monkeys and apes than they are like those of other animals. The monkeys and apes, moreover, approximate man in their psychological faculties; they have hands with which they can manipulate things with great agility. The anthropoid apes, moreover—the gorilla, orang-utang, chimpanzee, gibbon—have a relatively large brain; not as large or heavy as that of man, either absolutely or relatively to the size and weight of the body, but larger and heavier than the brain of most other animals with some exceptions which we need not here consider.

Man, then, is like a physical object, like a chemical composite, like a plant, like an animal, like a vertebrate, a mammal, a monkey, an anthropoid. Anyone who would examine nature with an open mind and discover man in nature so like many other things and creatures, would conclude that man belongs to nature, that he is part of nature, made of the same stuff and possessing the same properties. This man would be right. He would, moreover, express *not a theory but a fact*, the fact that Man and Nature are basically one.

But there may be other facts which this man, observing and judging as he did, may have overlooked. In the succeeding articles of this series—"Episodes from the History of Evolution":—

I. How Darwin and Wallace discovered Evolution
II. The Spencer-Weissmann Controversy
III. Huxley and the English Bishops
IV. Ernst Haeckel reconstructs the History of Man
V. Haeckel gets into Difficulties
VI. Osborn traces the Ancestry of the Horse
VII. De Vries supplements Darwin
VIII. Morgan brings Evolution Up-To-Date
IX. Are Acquired Characters Inherited
X. Were Our Ancestors Pygmies
XI. Evolution and Race
XII. The Facts of Evolution

I shall consider in greater detail on what facts is based the scientific conviction that man is part of nature as well as on what facts is based the equally scientific conviction that man stands unique in nature.

(Dr. Goldenweiser's second article will appear in next issue)

Is Evolution A Guess?

By Harry Hibschman

ANTI-EVOLUTIONISTS and Fundamentalists are so persistent in contending that evolution is not a fact but a mere hypothesis, theory, or guess, that it seems worth the time and effort to point out the fallacies in their arguments and to note the conclusions of eminent scientists themselves regarding this subject.

The foes of evolution err wilfully or ignorantly in three respects:

First, they fail to distinguish between the fact of evolution and the explanation of evolution. The scientist accepts as scientifically established the conclusion that present existing forms of life, including man, have been derived by a natural process from earlier, simpler and lower forms that themselves came from distant inorganic aggregates. As to how this happened, there are various views of theories. Regarding them there is great difference of opinion. But a rejection of a given theory of evolution, or of all present theories, is not a denial of evolution itself. Evolution as a fact has been proven. The theory of how it operates is something quite different.

Confuse Darwinism and Evolution

Second, they confuse Darwinism and evolution and speak as if the two meant the same thing. Darwin brought together in logical and decisive form the evidence of the fact of evolution, and his conclusions on that point have been accepted as sound. At the same time he undertook to explain the process of evolution, suggesting that it took place through natural selection and the survival of the fittest. This is Darwinism—Darwin's theory regarding the way of evolution. It may be totally wrong. Many who accept the conclusions of Lamarck or De Vries think it is at least inadequate. But it does not follow that if Darwin's particular theory as to the manner of evolution is rejected, the conception of evolution itself is rejected or even attacked.

A simple illustration will serve to clarify the distinction. Suppose that John Doe and Richard Roe are walking down the street one morning and come to the still smoking debris of a school building that burned down during the night. They examine the ruins and try to determine how the fire originated. John Doe, finding some rags soaked with kerosene, says it was set on fire; but Richard Roe concludes that it was struck by lightning. They may both be mistaken, but that does not alter the fact that the building has gone up in fire and smoke. Its destruction is a fact. What John Doe and Richard Roe think regarding the origin of the fire which destroyed it is theory. The former is indubitably true, though the latter may be false. And so it is with evolution and Darwinism. The former is a fact, the latter its attempted explanation.

Change Hypothesis to Guess

Third, they take the scientist's word "hypothesis," convert "hypothesis" into "theory" and "theory" into "guess" and then proclaim without shame of their intellectual dishonesty that evolution is nothing but a guess.

Harry Hibschman

The Standard Dictionary defines "hypothesis" as "a state of things assumed as a basis of reasoning, experiment or investigation"; and also as "*loosely and generally*, an unsupported or ill-supported theory." Now it may be possible for a theologian to use the word "loosely" in the second sense, but certainly a scientist never uses it in such a way.

Obviously the hypothesis of the scientist is something vastly different from the guess of the layman. It is a reasoned conclusion, based on a comprehensive grasp of scientific facts and laws in the field of knowledge, in which he ventures to formulate it.

A child guesses in which hand its playmate hides a lolly-pop. A scientist finds a new gas on the sun, and he works on the hypothesis that the same gas must exist on the earth. As a result we fill a bag with helium and fly across the continent.

But after all, the best way to settle the question whether evolution is a mere guess or not is to turn to the words of the scientists themselves. They, of all men, can speak with authority on this subject; and their attitude was made a matter of record in a statement adopted in December, 1922, by the council of the American Association for the Advancement of Science, which has a membership of over fourteen thousand—surely worthy of credit and respect in this connection as against the biased misrepresentations of the enemies of science:

"(1) The council of the association affirms that, so far as the scientific evidences of the evolution of plants and animals and man are concerned, there is no ground whatever for the assertion that these evidences constitute a "mere guess." No scientific generalization is more strongly supported by thoroughly tested evidences than is that of organic evolution.

(2) The council of the association affirms that the evidences in favor of the evolution of man are sufficient to convince every scientist of note in the world, and that these evidences are increasing in number and importance every year."

Meaning of Evolution

By David Starr Jordan

THE general theory of evolution is simple enough. All material objects change with time and space, and these changes are not random but due to definite causes, meanwhile as a whole and in detail following an orderly system.

We have no data on which we can assume that an orderly universe such as ours could exist without an Ordainer. Nor does our mental make-up react favorably to the idea. But of the Infinite Intelligence or Supreme Force different men in different ages have had endless diverging conceptions. A "Creator", to use a very insufficient human word, must certainly be as broad as his works. Infinite traits cannot be expressed in our very finite language, nor can they be understood by our very finite human brain. Hence our duties, towards one another and towards ourselves, which we agree are also our duties towards the Infinite, press upon us more actively and actually than conceptions of Theology, which is the science of what no one knows, nor ever can know in any detail.

Actual students in Evolution are now divisible into three schools, observers, experimenters and philosophers.

Essence of Darwinism

The school of observers, with Darwin, depends on what one may see all around him. Darwin himself devoted thirty years to the study of the divergence of species and to the accumulation of all facts which bore on the question. From this source comes, as I have already indicated, the strongest of all lines of argument, the cumulative. The same truth comes up from every quarter, with nowhere a fact which stands in opposition. The essence of Darwinism is that in running the great gauntlet of life, those individuals, men, animals or plants, which proved themselves enduring and adaptable have survived and have left descendents, who inherit more or less perfectly the same traits. Those weak or inadaptable (with many others) perish along the way, and a degree of competition is thus kept up which is the chief moving force of progress. The inherent factors, heredity and variation, keep up a slowly diverging series: no two individuals are ever quite alike, and none diverges very far from its immediate ancestral possibilities.

The whole world, furthermore, is beset by barriers of one sort or another, mountains, seas, climate, food, which break up the mass. In the shelter of a barrier, and under new conditions, new species are moulded, and we do not know of any species which may conceivably have been established in any other way. The formation of races of men, of dialects of speech, of all collective changes of whatever sort, depend on barriers limiting migration.

The school of experimenters work largely in the greenhouse or breeding pen, without as it seems to me, any adequate field of study. Some of them speak of Darwin as a back number. They lay less stress than I think they should on selection and heredity, finding in "mutations" or sudden changes, the chief clue to the origin of species. It is certain that remarkable variations or freaks sometimes arise, and these may often be preserved by heredity. Such variants constitute the basis for the art of selective breeding and their scientific study (genetics) is of the greatest value, but they have little or no place in the actual formation of species. And in no important respect have the charts now in line of completion diverged far from the lines laid down by the master, Darwin.

Man's Place in Nature Secure

That "Man's Place is in Nature" is so well supported as to leave room for no other inference. Man has certainly arisen by slow degrees from an early mammalian stock. Not from any of the existing types of man-like or anthropoid apes, still less from either of the two very different groups called monkeys. But it is known with reasonable certainty that the earliest man and the earliest anthropoids have had a common origin. Many of the various skeletons recently found in different parts of the world show traits peculiar to man as well as to apes.

In regard to the exact origin of man details are still uncertain. This fact gives rise to sharp differences of opinion. The earlier idea is that some extinct ally of the chimpanzee, apparently an arboreal or tree-inhabiting anthropoid, was ancestral to man. But it may be that man was primarily nomadic, erect in posture, living on the ground, climbing trees when necessary by hugging them; and that his families were held together by common speech or by the prolonged infancy of the young.

While the theory of Organic Evolution is not primarily concerned with man, and questions of his primal ancestry do not affect the main problem—yet man's place in nature remains the same, whatever view we may take as to his actual but still imperfectly known ancestors. In our records of the life of to-day and that of geologic history we find evidence of constant divergence, comparable by analogy to the spreading of the limbs of a tree. Each type shows a constant forward movement—upward or downward—along its own line and never returning. In looking for "missing links," we must go back in mind to find the common stock which preceded divergence. The link between man and apes is not a man-ape nor an ape-man, but some less specialized type which lay behind them both. The nearest approach to it thus far discovered is the Pithecanthropus, but this Java Ape-man is not likely our ancestor, for our lineage is older than he.

No Conflict with Noblest Conception

To men of knowledge and honesty there can surely be no permanent conflict between a widening knowledge of the universe, the details of its nature and range, and the noblest conception of man's duty towards his fellow man and himself. The more we know of life and of the world the more surely can we "walk the Earth's crust in adoration," and the more kindly our relation to our fellow beings.

The final decision as to all facts and theories of Organic Evolution must rest finally with experts in Biology. But all branches of science as well as all humanistic studies are already affected and vitalized by it. For it has become plain that no array of knowledge and no line of thought can fail to consider it, and to be influenced by its methods. For behind every phenomenon lies a cause and a history, and to know anything well demands a study of causes and effect and of the details of how it came about. Nothing static exists and to know a thing only as it is is to miss a large part of real understanding. By force of its necessary effectiveness in the pursuit of wisdom, the "method of Darwin" comes each year to occupy a larger and larger part in all phases of human thought.

The Origin of Land Vertebrates

By MAYNARD SHIPLEY

THE geological record shows that there was a very long period of time—millions of years—during which there was not a land animal on earth, excepting spiders, scorpions, centipedes, millipedes, molluscs, crustaceans, worms, and insects. In other words, backboned animals (Vertebrates) inhabited the waters only. (But even the earliest fish possessed, not a true backbone, but only a cartilaginous rod, which later became a truly bony vertebral column.) During an enormous period of the earth's history, then, there were no animals on the earth which possessed lungs, or limbs of bone and flesh.

The earliest fossil remains of vertebrate land animals belong to the period known as the Devonian, the sediments of which were deposited not later than some twenty million years ago. These earliest land forms would, naturally, belong to the Amphibia; for, if evolution is a fact, they would necessarily be derived from some group of fishes.

How Lungs Evolved

In order that a land vertebrate should evolve from a fish, the earliest terrestrial inhabitant would have to develop four limbs for land locomotion, and lungs to supply the body with oxygen. Its eggs might continue to be laid in the water—as is the case with the frogs of today. The earliest land vertebrate would naturally be amphibious, living part of the time in the water and part of the time on land. But lungs and limbs do not arise by magic. The lungs of the earliest Amphibians, as also their limbs, were unquestionably derived from some pre-existing organs. Every organ in the body of any animal has some genetic relationship to some older structure in some lower form. Whence, then, lungs?

We should surmise, even *know*, on the evolutionary theory, that there existed in early Devonian time—in the closing epoch of which occurs the oldest known footprint of a land vertebrate (viz., *Thinopus antiquus*)—a group of swamp-inhabiting fishes which supplemented their gill-breathing by air-breathing. And the Devonian strata afford abundant proofs of the correctness of this very logical inference. It can be shown just how the lungs of the Amphibia were derived directly from the air-bladder (or "swimming-bladder") of a gill-and-lung-breathing fish of the early Devonian period.

The fact that there is, in most Fishes, a connection-tube between the air-bladder, the oesophagus (or pharynx), and the mouth, through which air is inhaled and exhaled, leads, in certain cases, to very important results—apart from the ordinary function of the swimming-bladder as an organ used to facilitate rising and sinking in the water. The inhalation of air served to feed the arteries of the walls of the swimming-bladder with oxygen, this organ, in certain groups, serving as a substitute for the gills in times when stagnant water was poisoned with an excess of carbonic acid, arising from decaying vegetable or animal matter in more or less putrid pools. It was observed by Semon, in Australia, that the lung-fish *Neoceratodus fosteri* was able to survive in a partially dried-up water-hole so foul that it was full of dead fish of the ordinary kinds—fish wholly dependent upon gill-breathing. Another genus of lung-fish, of which three species are found in Africa, is able to breathe air still more largely by means of the air-bladder—the sole breathing organ during the dry season.

In both *Protopterus* of Africa and *Lepidosiren* of South America, the swimming-bladder is bilobed, or double, and the walls are developed into pockets, or sacculi, exactly like the lungs of land vertebrates. The entire arrangement of the pulmonary veins and arteries, and of the vascular system in general, is very similar to that of the Amphibia, including the structure of the heart. Even the brain of the African Dipneans resembles that of the Amphibia. The larva of these fish is very much like the tadpole of the frog. Fossil remains of two distinct groups of lung-breathers are abundant in Devonian strata—sediments laid down at a time when the earth's crust was characterized by successive elevations and depressions of land surfaces.

Origin of Legs and Arms

As to the origin of limbs, we must look for their beginnings in the fins of the early Devonian fishes. Fortunately, we have a striking fossil example of a fin in the process of being transformed into a forelimb. Examination of a Devonian fossil fish known as *Sauripterus taylori* reveals a central hand-like lobe-fin of cartilaginous rods surrounded by a fringe of paddle-like dermal rays. The dropping of this fringe—a modification of the skin—would leave a cartilaginous arm and hand-like structure, already divided into a humerus, radius, ulna, wrist, and several fingers. The shoulder-girdle of this transition type of fish is homologous with that of an Amphibian, part for part—clavicle, supraclavicle, scapula, coracoid.

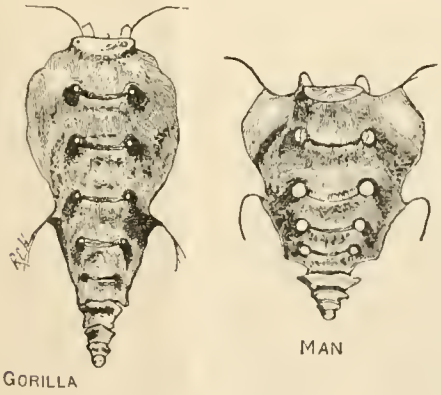
Here, then, we furnish the anti-evolutionist with concrete "links" which are not "missing"!

Man: A Walking Museum of Antiquities

By BERNHARD J. STERN

CHARLES DARWIN once aptly remarked that man can scarcely sneer at the theory of evolution without showing under his upturned lip the canine teeth that proclaim his anthropoid relationship. The long canine is considerably abbreviated in man as compared to the gorilla but it is there none the less, indicating his descent. One can acquire wisdom concerning evolution also from man's "wisdom teeth," which are largest among the molars in the gorilla, but which in man offer little or no assistance in mastication. They are "vestiges," relics of man's previous biological form, museum specimens which persist in appearing in modern man.

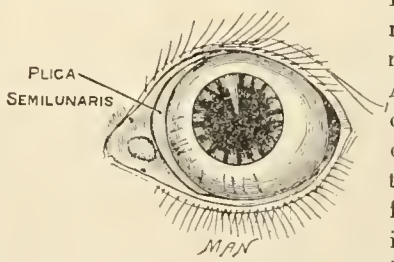
There are about a hundred of such "vestiges" in the human body, which prove man's affinity with the lower animals; we shall consider only the most obvious of them. Do you remember when you were young, your envy of the boy who could excel in wiggling his ears and how you were spurred to attain some success in such an achievement yourself? You were only making use of the muscles of the external ear, which quadrupeds needed to enable them to move their ears to catch sounds. Man can revolve his head in the direction of the sounds but the muscles of the ear remain in a dwindled condition. Similarly, some of us have seen in circus side shows men who can voluntarily move any part of their skin, and all of us can raise our eyebrows and wrinkle our foreheads. Among our animal ancestors this twitching of the skin was instrumental in ridding them of pestiferous insects.



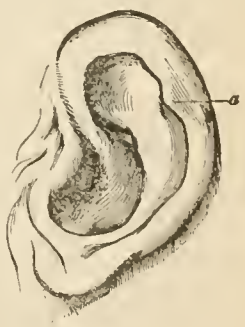
TAIL BONES *

But where is man's tail, asks the anti-evolutionist? The tail is lacking in man as it is among the anthropoids, but rudimentary tail bones remain as part of man's vertebral column, and very often the tail muscles persist in a dwindled condition. Therein lies another tale of man's ancestry. And where is the hairy coat of the ape? It is represented by the short hairs over the body surface of man, at whose roots are functionless muscles similar to those which elevate the hairs of the ape. The conformation of the hair on man's arms is exactly like that on the arms of the ape, where it serves to protect the animal from rain as it sleeps with its hands folded over its head. The collateral relationship of the ape and man is thus strikingly brought out.

That extremely complicated mechanism, the human eye, cannot be explained except in terms of its evolutionary development. One of the most interesting "vestiges" in the human body is the crescent-shaped fold in the inner corner of the eye, which now serves no purpose. Among the sharks and other of our fish ancestors, this semi-transparent membrane functioned as a third inner eye-lid by sweeping rapidly over the external surface of the eye, perhaps in order to keep the surface clean.



No matter what shape the ears of some men may be they do not approximate the elongated ears of the lower apes, which end in a point. But though the shape and size of man's ears have changed, the tip of the ape's ear is very often represented in the inner fold of the margin of the human ear by what is known as "Darwin's point." He characterized it as "a surviving symbol of the stirring times and dangerous days of man's animal youth."


Darwin's Point

These vestigial organs in the human body, which make man a walking museum of antiquities, have been compared to the unsounded and therefore functionless letters in words, such as the *o* in "leopard," the *b* in "doubt" and the *g* in "reign." These letters are now of no use, but we learn from them the history of the words. So too, do the vestigial structures reveal man's biological evolutionary history.

*Illustrations for this article taken from Newman's Readings in Evolution, after Romanes.

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NEITHER HIGHBROW NOR LOWBROW

EVOLUTION is not printed for the edification of specialists in science. Plenty of professional journals for that purpose.

Neither does it propose to "convert" fundamentalists. It will not appeal to those that base their opinions upon faith instead of facts.

EVOLUTION is published for the ordinary mortal that would like to know "what it's all about."

Heretofore most of our neighbors haven't bothered their heads much about natural science and evolution. But the tremendous agitation to outlaw evolution that the fundamentalists are now starting will cause a great many laymen to want to know something about it.

So EVOLUTION will be Johnny-on-the-spot, easy to read and easy to understand.

At the same time EVOLUTION will always be strict regarding facts and will merit the respect and support of the most eminent men of science.

ARKANSAS NEXT?

So there's to be a popular referendum on evolution in Arkansas. Fundamentalists boast that they already have over 9,000 of the 12,000 signatures necessary to place the question on the ballot. They'll quickly get the rest.

Now don't make the mistake of cracking jokes of the "Slow Train Through Arkansas" variety. Arkansas is not the home of John Roach Straton or Aimee Semple McPherson. The people of Arkansas stack up fairly well with the average in our U. S. A. What happens there is a pretty good indication of what will happen all over the country unless the facts about natural science are carried direct to the people.

EVOLUTION offers itself for this purpose.

MAN'S BLOOD COUSIN—THE GORILLA

As we expected, the front cover of our first issue, showing Man's Blood Cousin—The Gorilla, caused comment all over the continent. A few who would have been glad to ignore EVOLUTION if we had published a conventionally polite cover were aroused to fury by its powerful challenge, but nearly all the comment was very favorable.

Perhaps the most thoughtful remark was made by Arthur Brisbane in his column in the New York American. Said he:

"EVOLUTION, new magazine, has on the front page a big gorilla labeled "Man's Blood Cousin" . . .

"Nevertheless, the gorilla, although his blood is marvelously like that of human beings, is certainly not man's cousin *mentally*. If he were, he would eat other animals as man does and kill his own kind for glory as man does."

DANGEROUS DOCTRINE

"Why bother with the beliefs of the morons? Evolution goes on just the same."

A comforting view of some professors, seemingly secure behind cloistered walls in their "passionless pursuit of passionless knowledge." But very dangerous doctrine.

Even in the good old days it made a difference what the morons believed, as many a "witch" could testify, gently roasting at the stake.

And today said moron is a sovereign. He may not be able to stop evolution, but he'll surely stop the clock of the evolutionist unless men of science come out of their monastic seclusion and make it part of their business to acquaint their neighbors with what they have learned about man and nature.

The columns of EVOLUTION are at their service.

HE KNOWS, BUT HE WON'T TELL

By EDWIN TENNEY BREWSTER

THE Oracle again utters its voice—and, as usual, gets things precisely wrong.

Somebody asks Reverend S. Parkes Cadman, D. D., the quite reasonable question, "If mankind developed from monkeys, as the evolutionists say . . . at what point in the process did the soul enter into man . . . ?"

Dr. Cadman knows, of course; he just does not want to tell. So he sidesteps with this:

"Will you give me the name of any reputable authority who fathers the assertion that 'mankind developed from monkeys'. . .? There is no excuse for these misrepresentations wherever a schoolboy's science primer is handy. It is no wonder that religion suffers the scorn of the godless and of secular scholars when its adherents advance such empty rhetoric in its defense."

One does not quite know what, in the bright lexicon of syndicated misinformation, counts as "a schoolboy's science primer," but if one may cite school textbooks, there is Dryer's "High School Geography" (American Book Company, Part I, Page 255). "His (man's) structure indicates descent from ancestors of apelike habits, living in trees, and on fruits."

Or if one tries the schoolboy of a larger growth, there are the two big volumes of "Human Origins," by George Grant MacCurdy, Ph. D., of Yale University (D. Appleton, 1924, Page 299; Vol. 1). "The modification of the human frame for the erect posture could take place only after an extended period of arboreal life . . . The apes . . . have never completely gained erect posture; the complete break with arboreal life was successfully made only by the human precursor . . . "

Hence we see, my children, that we did not, as some ignorant persons suppose, ever have a monkey for an ancestor. He was, to be sure, "a creature of apelike habits living in trees"; and he had "an extended period of arboreal life." But a monkey—certainly not! A whale, perhaps; or an elephant?

Marshaling Ignorance

By Jesse Lee Bennett

THE intelligent portions of the outside world have been startled by the intensity of feeling displayed by the Fundamentalist forces in America in their fight against "evolution."

How, they have asked, could such a phenomenon develop in a country only one hundred and fifty years away from founders nearly all of whom were rationalists; in a country possessing such educational facilities and such perfection of ways of intercommunication as was never before imagined?

The plans of the men of the revolutionary era were clear. They sought absolute separation of church and state, and universal literacy which would prevent the functioning of the age-old machinery—political or ecclesiastical—for the marshaling and exploitation of ignorance.

Ecclesiasticism Now Dominates

When, in the material realm, the development of the United States had transcended all hopes: when, with six per cent. of the population of the earth, it possessed more than half the gold and such wealth as was never before imagined; when its schools, libraries, newspapers, magazines, motion pictures and radio bound the common mind of America together as one unit, the outside world saw the strange phenomenon of ecclesiastical domination of legislative bodies.

What is the explanation of this unexpected development? How has it been possible to marshal and exploit ignorance in a nation possessing universal literacy?

No answer will be offered here but any satisfactory answer would cast brilliant new light on the whole structure of American life.

Jefferson predicted that "the people will lose themselves in the sole faculty of making money." His prophecy has come true. With wealth has come luxury and a totally unjustified sense of enduring and inalienable national security and superiority. The concentration of this wealth, moreover, has permitted a centralized oligarchy to control not only financial and political power but all the agencies for reaching the common mind. It uses these to obscure thought, to standardize, befuddle and misdirect.

In the ecclesiastical field it adopts its old tactics of claiming revealed dogmatic religion as the sole guardian of security, prosperity, virtue, the home and all the other instinctive and unreasoning human hopes and fears. This new success of ecclesiasticism must make Jefferson, Franklin, Washington and Tom Paine turn over in their graves!

Mr. Mencken once declared that the virulence of the Fundamentalist movement was due not to any ethical or aesthetic repugnance to the theory of evolution—but to the over-compensation of an inferiority complex awakened because of inability to understand this theory.

There is somewhere a grain of soundness in this idea. To understand the theory of evolution the mind must first of all be open and it must also have been equipped with some understanding of the basic generalizations underlying each of the natural sciences.

Closes the Mind

Ecclesiasticism of course closes the mind and prevents any realistic understanding of scientific generalizations of any sort.

Enmity is generally the result of ignorance and fear. The savage kills the stranger basically for the same reason that the ignorant man can be made to regard evolution as an enemy of mother, home and heaven. It is the fear and suspicion of the unknown, of the strange, of something making demands on understanding not properly equipped.

If there be any validity to these ideas it must follow that attempts to popularize the theory of evolution are at best only palliative measures; that the basic problem consists in learning how to gain control of the centralized machinery for education and dissemination of facts and ideas so that this machinery can be used to enlighten and not merely to entertain and befuddle.

The huge tribe formed by forty-eight united states differs in size, not in kind, from the small tribes all past history has known. The chief and the medicine man have dominated such tribes for their own purposes. The chiefs and medicine men are beginning to dominate the huge American tribe for their own purposes. That large numbers of ignorant but literate men can be brought to elect legislators sworn to protect Fundamentalism and to prevent the teaching of evolution, that vast numbers of literate but ignorant people are obviously incapable of understanding the theory of evolution is but one indication of the success of these eternal oligarchic aspirations.

Only Hope Lies in Scientists

The mere perfecting of devices for reaching the common mind is not enough. The manipulation of these devices must be at least partly controlled by scientists. So long as scientists remain immured and blind to this social responsibility; so long as they fail to assume their proper place in the political realm; so long as they make no conscious and deliberate attempts to diffuse to the great masses of the people the information of which they are custodians, efforts to popularize evolution or to spread knowledge of any sort can hope only for minor, and possibly, ever decreasing effectiveness.

The hope of the future lies with the scientist. Will he become an active instead of a passive force in our common life? Will he indefinitely permit the marshaling of ignorance or will he justify his existence by assuming his proper place as the guide of the modern world?

ANOTHER TENNESSEE CASE?

Just as we go to press we learn that J. H. Tate, principal of the Farragut school, ten miles from Knoxville, Tennessee, is under fire because he gave a definition of evolution in one of his classes.

The case promises to be interesting since Tate himself is said to be a fundamentalist, superintendent of the Sunday School and deacon of the Grass Valley Baptist Church. But he seems to be a wee bit open-minded, so the "leading citizens" of that burg are after his scalp.

How Old is the World?

By ALLAN STRONG BROMS

Some Fundamentalist Versions

JAMES USHER, Archbishop of Armagh, set the date of creation in the year 4004 B. C. Dr. John Lightfoot, Vice-Chancellor of Cambridge University, "improved" this dating by fixing the week of creation for October 18th to 24th, so that Sunday, the 25th, became the first day of hard earned rest. But later scholars, of equal "authority", have placed the date variously at 4710 B. C. and 5872 B. C. So, after all, the doctors of divinity disagree and we may, without offense, consider

Some Scientific Versions

In a rear storeroom of the American Museum of Natural History in New York, I was one day privileged to examine a collection of banded clays carefully preserved with glycerine in long metal pans. From them, Dr. Chester A. Reeds and other scientists were reconstructing the history of the New Jersey, New York and New England areas at the close of the Great Ice Age, long before the coming of the white man. They already had a complete year by year record covering thousands of years, indicating a date for the melting away of the ice sheet perhaps more than ten thousand years ago, but so far not definitely connected with modern dates. One of them, Dr. E. Antevs, was, however, busily gathering samples of clay from Canada for that very purpose. He was trying to fix definite dates for the various stages of melting and retreat of the ice sheet which once covered nearly all Canada and much of the northern United States.

His hopes of success rested upon a previous success elsewhere. He had assisted Baron Gerard De Geer, the Swedish geologist, in applying a new method for finding the dates of retreat of the Baltic Ice Sheet which had invaded the Scandinavian countries, Finland and parts of Germany and Russia. They had fixed dates as early as 11,600 B. C. and connected them definitely with our own calendar dates.

When the long cold spell which caused the Great Ice Age came to an end, the edge of the ice sheet melted back as though retreating. Here and there along its front, pools and lakes of icy water would form. These waters of melting would be muddy with silts and gravels. During the warm summers, when melting was rapid, the swift flow of waters would carry away the finer silts, but let the coarser gravels settle in the lake bottoms.

LIKE THE RINGS IN A TREE

When the cold of winter stopped the melting, the flow of waters would slacken and permit the finer silts to settle slowly and form a dense layer of darker clay. Each passing year would therefore be marked by two alternating layers of gravel and clay, each pair being a yearly cycle or "varve". The principle is exactly the same as that by which we measure the age of a tree by the number of rings of growth.

THE GREAT CLAY CALENDAR

Banded Glacial Clay
From New Haven, Conn.
Collected by Dr. E. Antevs

Retreat of glacial ice sheet

Fortunately the layers are not all alike, but can be positively distinguished and identified over wide areas. During an exceptionally warm summer, a deeper gravel layer might be formed or other distinctive variations appear. The annual deposits in one lake can thus be identified with those in other lakes nearby and by going from one to another, a complete series for thousands of years may be worked out. In fact, they have been traced to the very fronts of existing glaciers in northern Sweden (where just such layers are now being laid down each year), and so connected with our own times.

Obviously, no layer could be formed at any point until the ice had melted from the region. The edge of a layer of any date, where it touches bedrock, will therefore mark the edge of the ice sheet at that date. By this method, the stages of retreat of the Baltic Ice Sheet have been carefully dated as shown on the map. The entire record goes back some 13,500 years, long before the Fundamentalist's date of creation.

PLENTY OF YEARS FOR EVOLUTION

But more than this, the ice sheets must have required tens of thousands of years to accumulate, for they were probably a mile thick in places. Furthermore, the geologic records show that there have been many such ice invasions, separated by periods of warmth as long or longer than our own. So we may safely assume, for the Ice Age as a whole, not merely tens, but hundreds of thousands of years.. Nor is this all, for underneath the rubbish left by the melting ice sheets, which is really very thin upon the deep earth crust, are records indicating an earth age of millions of years. At least we may be satisfied that there is no poverty of years for the slow evolution of life upon the earth.

(In our next issue Mr. Broms will explain how scientists measure the age of the earth from the radio activity of uranium and thorium.)

DOES SUCCESS BREED CHILDREN?

THE loud wailing set up by eugenists to the effect that people with the best minds tend to have the fewest children, while the most ignorant reproduce most abundantly, ought to be toned down a little, according to Dr. Frederick Adams Woods, formerly professor of biology at Massachusetts Institute of Technology.

At least, he says, among college graduates who have been out of Harvard University for twenty-five years or more, it is the successes who have the most children. He took as an arbitrary measure of success a place in *Who's Who in America*. Dr. Woods found that 25.5 per cent. of the parents with four or more children in the class of 1894 were listed in *Who's Who*.

FUNNYMENTALS

"Better wipe out all the schools than undermine the belief in the Bible by permitting the teaching of evolution."

—The Rev. John Roach Straton, D.D., Calvary Baptist Church, New York.

"Take the evolutionists, infidels and no-hell teachers out somewhere and crucify them, head downward, and we will have a better country to live in and, instead of these evolution and easy way ideas, teach people the Word of God to go by, and all will be well."

—Correspondent of Greensboro Daily News. Quoted by Sprading.

"Worse than an assassin who kills the body is he who shatters the faith of youth."

—Kansas City Preacher at Christian Endeavor Convention, Denver.

"In another two years, from Maine to California and from the Great Lakes to the Gulf, there will be lighted in this country countless bonfires, devouring those damnable and detestable books on evolution."

—Edward Young Clarke of the Supreme Kingdom quoted by The Post of Birmingham, Ala.

"The doctrine of Charles Darwin, in portion as it dominates the future, the biological theory of evolution to the extent of its final acceptance, will make the recent baptism of blood, brought on by Nietzsche and Treitschke under the domination of that biological theory, as compared with the baptism yet to come, as a local shower to the flood that will prevail over every mountain."

—W. B. Riley, in The Theory of Evolution,

"The consensus of scholarship can go to hell for all I care."

—Billy Sunday in sermon.

"Evolution is in no sense a science, but is instead an irreligious philosophy of creation and all existences, and its teaching in tax-supported schools is absolutely contrary to both the spirit and language of the United States constitution and of the several state constitutions as well; on the ground that the Bible was banished from the public schools because it taught a distinct religion, so should all Christian and even all fairminded citizens now demand that the Darwin philosophy, by nature and constitution agnostic and atheistic, shall be at once and forever removed from our tax supported schools and no advocate of the same be permitted to voice himself before the students upon the same."

—From resolution adopted by Worlds Christian Fundamentals Association at its convention in Atlanta in 1927.

"Take a jackass, a hog and a skunk and tie them together and you have a scientific evolutionist or modernist."

—Rev. Charles F. Bluske, of Asheville, quoted in The American Mercury.

EVOLUTION IN SOUTH CAROLINA

By ROBERT F. HESTER

WITHIN the past few months, two university professors have been ousted from their positions in South Carolina educational institutions because of their pro-evolutionary leanings. One was a Professor Pickens, of Furman University, Greenville, S. C., and the other Prof. William G. Burgin, professor of sociology at Winthrop College, Rock Hill, S. C. The fact of chief significance in connection with the latter was that the decision of the college against him was at the last unfavorably influenced by Gov. John G. Richards of South Carolina. Both men had enjoyed excellent records at the institutions previous to their announcements of their evolutionary tendencies.

But this apparently weighed little with Governor Richards. In his inaugural address, it is reported that he made it plain that no man or woman who did not implicitly accept the story of creation as told in Genesis should be tolerated in educational institutions supported in whole or in part by state funds. In a statement subsequently published in a Columbia newspaper, he declared that "any person or persons who are discovered to be antagonistic toward the Christian religion or the Bible, either the Old Testament or the New," would be rooted out of the schools of the state.

The ultimate destiny of South Carolina under such executives is rather difficult to predict. The whole matter hinges upon the question as to whether or not the State's population as a whole has or exercises more brains than its chief executives. If it has not, then its destiny may be safely predicted—it will become, if not the most criminal, at least the most ridiculous state in the American Union.

Nor is Richards the first governor of this state who has upheld fundamentalism and opposed even a slight tendency to the acceptance of evolution among its teachers. Former Gov. Cole L. Blease once advocated the strict examination of all prospective teachers as to their religious beliefs before their admission into South Carolina's schools and colleges. If their beliefs should thus be found to be in any sense antagonistic to the fundamentalists' creed, he recommended in strong terms that they should be barred from the state's educational institutions. And this same fellow was thereafter elected to the Senate of the United States.

So long as these conditions obtain in South Carolina, the state can hardly defend itself against the ridicule and derision of civilization.

CO-OPERATE BY CLIPPING

Readers are invited to send clippings of news and articles that they consider interesting, being sure to give date and name of publication from which taken.

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The immediate business is publishing this journal, EVOLUTION and selling books. Later a Lyceum Bureau for touring natural science lecturers will be developed.

Although it is expected the business will pay, share-holders are not invited on the basis of making profits, but because this work is WORTH DOING.

Additional capital furnished now will help make the circulation campaign for EVOLUTION magazine a success. Checks should be made payable to EVOLUTION PUBLISHING CORPORATION. In remitting kindly state whether payment is made in full, or whether it should be applied on a larger block of stock to be held until the balance is paid.

LET US MAIL SAMPLES TO YOUR FRIENDS

Of course you'll show this issue of EVOLUTION to your friends and ask them to subscribe. But you probably know some who would be interested, whom you can not visit yourself. Send us their names and addresses and we'll mail them sample copies.

It will cost us about five cents a copy to send out these samples, so if you can send along a check to help pay for them we'll not object. However, if your bank account is minus don't let that stop you. Send us the names anyway and we'll raise the cash otherwise.

WHAT'S A HUNTER WITHOUT AMMUNITION?

A hunter without ammunition is in the same fix as an evolutionist without copies of EVOLUTION. Surely YOU don't want to remain in such a pickle. The best way out is for you to fill in appropriate characters on the following blank in a hurry.

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THE MONKEY AND THE MOVIE

By Albert J. Ingalls

HOW would monkeys and apes react to motion pictures of other monkeys and apes? To test this point a motion picture called "The Gorilla" was shown recently in the monkey house of the New York Zoo. Several scientists observed the caged anthropoids during the show.

The monkeys virtually ignored the picture, even when the "gorilla" appeared. But an ape, "Bessie," a half-grown female chimpanzee, watched the entire show.

After Kohts and C. K. Ogden.

Chimpanzee Laughing

She curled herself up comfortably and made an evening of it. Never once did her eyes leave the screen. Her interest was uniformly keen, but she revealed no sign of emotion. Her eyes shone throughout, and followed each entrance and departure of an actor. What she thought, what the comings and goings of the actors meant to her, if they meant anything at all, I do not know. But she seemed to take in the movies just about the same as anyone else would.

The chimpanzee's intelligence is about on a par, in some ways, with that of a child of four or five. The gibbon, the orang and the gorilla are classed with the chimpanzee, making a family called the simians. These four apes stand closer to the human being both in body and mind than to the large group of primates commonly called monkeys, and their intelligence is far above that of the monkeys.

Those interested in the mentality of apes will find much food for thought in Yerkes and Leonard's "Chimpanzee Intelligence and Its Facial Expression"; also in Robert Yerkes' "Almost Human" and Professor Koehler's "Mentality of Apes." In the March, 1927, issue of *The Quarterly Journal of Biology* (Baltimore, Md.) there was a long article on "Anthropoid Behavior" by Robert M. Yerkes and Margaret Child. Incidentally, this article contains a complete bibliography of the entire subject of anthropoid ape behavior.

MEET OUR CARTOONIST: NATE COLLIER

Many readers will want to know something about the artist who created the clever cartoon on the back page of this issue. The following, by Nate Himself, in January *Art and Life*, elucidates.

My Autobiography

Born at the age of sixteen one Wednesday morning of the afternoon of Friday, somewhere during the ides of March in December, according to Hoyle, in the year of the big wind about 1648, Anno Dominoes or Before Christ. I forget which.

Graduated from Heidelberg in 1661.

Shipped on the good ship Wiffempooff, 1662, for first cruise around Cape Horn.

Assassinated by boomerang thrower in Australia, 1663.

Collaborated with Victor Hugo in writing "Memoirs of a Goldfish," 1670.

Built Trans-Siberian Railway, 1741.

Wrote Grays Elegy in Country Churchyard, 1750.

Discovered Kippered Herring, 1760.

Founded Society for Prevention of Cruelty to Sardines, 1800.

Married Cleopatra, 1802.

Pitched for Giants, 1813 to 1842.

Married Carrie Nation, 1856.

Wrote Gullivers Travels, 1858.

Married Joan d' Arc, 1859.

Joined Brigham Young's Mormon Invasion of Utah, 1865.

Discovered North Pole, 1872.

Invented Non-skid Pancakes, 1873.

Wrote "The Love-Life of a Cheese Sandwich", 1880.

Emigrated to Poland, 1883, and started Coca-Cola Rebellion.

Invented Cross Word Puzzles, 1925.

And am still apparently a young man in my early seventies, with a long life before me. (Signed) Nate Collier.

After Koehler and C. K. Ogden.

Yes—We Got the Bananas

SCIENCE SERVICE

THOSE who wish to keep in touch with current scientific progress throughout the world, but who have not the time to read the technical publications, are recommended to investigate Science Service. This organization, founded some years ago by the late E. W. Scripps, interprets to the non-technical public the work which technical men are doing, but are often unable to tell about in language which the layman can understand.

From its office in Washington, D. C., it mails to newspapers subscribing to its service a daily *Science News Bulletin* summarizing current science news. It also furnishes a telegraphic service covering "spot news" of new inventions and discoveries, earthquakes, comets, explorations, and so forth. A weekly feature service also is sold to newspapers and a number of other features covering various phases of science.

To the individual layman, however, its most interesting service is the *Science News-Letter*, a weekly magazine, using Science Service newspaper feature material, with the addition of book reviews and other features. A full description of Science Service features may be had by writing to that organization at B and Twenty-first Streets, Washington, D. C.

SYNTHETIC FOOD

PROF. E. C. C. BALY of the University of Liverpool has made up his mind he is going to manufacture food synthetically and thus transfer the farm to the laboratory. In his experiments he is trying to imitate the process by which plants turn carbon, hydrogen and oxygen into that chemical combination known as sugar, and later changed for storage purposes into starch.

After years of research he believes he is approaching this secret. By suspending finely powdered carbonate of nickel or cobalt in water containing carbon dioxide gas and exposing this to sunlight, sugar is produced. While the process is not the same as that which takes place in connection with the chlorophyll in plants, Professor Baly believes he is on the road to discovering one of the fundamental secrets of nature.

After all, all life depends upon this process. There are some animals that live on other animals, but most of those eaten as prey live upon plant life.

ARE YOU A STREET SPEAKER?

I'll stake you to a dollar's worth of Evolution, twenty copies, if you'll write me right away for I know they'll sell like hot cakes at your first meeting Address: Katterfeld, c|o Evolution.

CREATION, A HISTORY OF NON-EVOLUTIONARY THEORIES. By *Edwin Tenney Brewster.* Bobbs-Merrill Co.: $3.50.

This is a scholarly book in the best sense. It is careful of its facts and presents them without prejudice. But if by "scholarly" you mean dry and difficult, it is anything but that.

It purports to deal with non-evolutionary theories only, and precisely because it does so, it fills a gap in our literature of evolution. It gives the background for the evolution of evolution. Heretofore the histories have stuck much too closely to the subject. They have told of the pioneers of evolution from the Greeks to Darwin, but never so clearly of the forcing of the mind to accept evolution over other theories because the facts decreed. As you read this book and note the successive yieldings of inadequate theories to inexorable facts, you realize how very significant the evolution theory is, how well it explains, how completely the evidence supports it and why the scientific world so unreservedly accepts and uses it. The book is most convincing.

It supplies ammunition. It enumerates those difficult facts which the anti-evolutionist can never explain. It is literally loaded with "posers." The militant evolutionist will certainly delight in it. I am afraid he will even laugh with joy as he reads it. He will probably tuck it under his gun arm and start right out stalking Fundamentalists. A. S. B.

THE OUTLINE OF MAN'S KNOWLEDGE. By *Clement Wood.* 728 Pages. Published by Lewis Copeland Co.: $5.00.

Clement Wood, fitted for his task by many years of study, has presented his story in "The Outline of Man's Knowledge" with the painstaking accuracy of a scientist and the imaginative vision of a poet. In his hands, the vast accumulated knowledge of five million years becomes fascinating narrative. The reader is made the master, not of segments of unrelated knowledge but of knowledge as an evolving and related whole, and as he reads he comes alive in the fullest sense to the scheme of things.

Earth began. Life arose, people developed. Over the vast scattered surface of the globe different people rose to separate and distinct achievements, went forward to diverse destinies. The long reach from tribal life and instruments of stone to the complicated age of airplane and the hectic ticker tape, rivals in interest one's favorite novel. The maps of Ilonka Karasz and the decorations by Louis Bromberg decidedly increase the value of this guide to education.

History, Philosophy, Physics, Poetry, Drama, Painting, Sculpture, Astronomy, Biology, Psychology, Mathematics, Sociology, Literature, Architecture, Religion, Music—the important facts that have been learned since the beginning of history are presented here in untechnical language that not only everyone can understand, but can enjoy. In perfecting the various sections, Mr. Wood has had the advantage of suggestions from, and cooperation with, the best minds in each department. Professor James Harvey Robinson, Meade Minnigerode, Gamaliel Bradford, John Sloan, Professor John Dewey and Dr. Fagnani are some of the names cited by Mr. Wood in his acknowledgment.—JOSEPHINE HERBST.

THE BEST BOOK ON EVOLUTION

A number of readers have asked "What is the best book on evolution for a friend who is not a scientist?"

To all such I recommend unhesitatingly "Evolution for John Doe," by Henshaw Ward. It is the most interesting and convincing book of which I know. Its contents include:

Part One: A Description of Evolution.
1. What John Doe Thinks About Evolution.
2. The Myriad Forms of Life.
3. The Tangled Web of Life.
4. The Varied Modes of Life.
5. The Jungle of Adaptations.
6. The Struggle for Existence.
7. Variation.
8. Heredity.
9. Natural Selection.

Part Two: The Evidences of Evolution.
10. What Evidences Are.
11. Evidence from Rivalry of Scientists.
12. Evidence from the Rocks.
13. Evidence from Geographical Distribution.
14. Evidence from Classification.
15. Evidence from Artificial Selection.
16. Evidence from Structures of Animals.
17. Evidence from Embryos.
18. Evidence from Blood.

Part Three: The History of Evolution.
19. Lamarck.
20. Darwin.
21. Weismann.
22. Mendelism.
23. DeVries's Mutations.
24. How Evolution Stands Today.
25. The Fosdick Idea. L. E. K.

RECEIVED FOR REVIEW

CHARLES DARWIN: THE MAN AND HIS WARFARE. By Henshaw Ward. Published by Bobbs Merrill. $5.00.

THE MILLENIUM AND MEDICAL SCIENCE. By David N. Schaffer. Published by the Author. $2.00.

ALL SOLD OUT

Meadow's news stand, Forty-second St. and Sixth Ave., New York, re-ordered twice. Sold over 100 copies.

The A. A. A. A., 119 E. 14th St., N. Y., sold 145.

So many second orders were received for our first issue that we haven't any left at the office. If anyone has unsold copies remaining, we will be very glad to send postage for their return.

A PRAYER

O, would that evolution
Could change the convolution
Of the Fundamentalist brain;
Create a sense of humor
To replace the deadly tumor—
That causes him such pain.
—BOB LYLE.

HERE ARE SOME GOOD BOOKS

EVERY reader of EVOLUTION is *of course* also a reader of books. We recommend the following in their respective fields.

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THE HIGHER FOOLISHNESS: David Starr Jordan	2.50
EVOLUTION FOR JOHN DOE: Henshaw Ward	3.50
CIRCUS OF THE INTELLECT: Henshaw Ward	3.50
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MENTALITY OF APES: Koehler	3.00
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From Our Readers

"I shall not subscribe. I object to your using such a weapon as making 'fun'." Emily N. Wilson, New York.

"Oh, boy, what a kick it carries." J. L. Sullivan, Ohio.

"Received sample. Thank you. I hope to see the day when EVOLUTION will have one million subscribers and wish you every success in your new venture. Inclosed please find my check for $4.00 for six subscriptions and $1.00 for Broadcasting Fund." David N. Schaffer, Ill.

"Send me a hundred or so. Can handle 200." H. H. Stallard, Oregon.

"Just received your nice magazine EVOLUTION. To say we were delighted would be putting it mild. I hasten to enclose $3.00 for J. O. Beebe and two friends. I wish you success." Mrs. J. O. Beebe, Cal.

"EVOLUTION looks good. Here's hoping it helps us all lose our tails." Solon DeLeon, N. Y.

"I would feel disposed to support your journal except that you have taken occasion to make use of ridicule of fundamentalism and I feel that it is a pity that you should stoop so low in work for a high cause." C. P. Wilson, California.

"A friend loaned me Number One of EVOLUTION, and I found the excerpts from our fundamentalist friends so exhilarating that I want to subscribe. Here is the dollar." S. H. Gage, New York.

"If you are going to keep up the excellent type of articles which appear in this No. 1, I want it regularly. I am enclosing my cheque for one year in advance." G. Bacon Price, California.

"Hearty congratulations on the first number of EVOLUTION. Enclosed find $2.00. Wish you success in this much needed publication." Edward M. Kimble, Canada.

"We wish to congratulate you on this splendid journal and feel sure that with the great need there is for this type of paper that it will quickly become a leader among the liberal press in fighting the shams and hypocrisy of fundamentalism." Zachariah Wingate, Missouri.

"I'm delighted with it." H. J. Stuart, Alabama.

"The magazine is good and is bound to have a large circulation. Send us 350 copies as sample copies to our agents. We are sure they will get a number of subscriptions." Martin M. Attila, Wis.

"I hope you will not only defend evolution but counter attack those that are assailing it." Homer H. Wakefield, N. Y.

"The journal will certainly fill a long felt want. I trust it will not be too blatant. If the editorial "Our Policy" is adhered to, it will not. The front page is 'great.'" Franklin C. Smith, New Jersey.

"I think this is a most unfortunate publication from the standpoint of those who are primarily interested in disseminating trustworthy information about evolution in a form calculated to win adherence rather than stimulate antagonism.

"I am not alone in this feeling for I have received both letters and telephone calls asking whether I have seen your publication and expressing disgust with it." C. Stuart Cager, New York.

"I have just received the first number of your paper, EVOLUTION, and am very greatly pleased with it. I should like to give it a good notice in the next number of the *Quarterly Review of Biology*. Will you not be willing to let me reproduce in this review the cartoon on page 9 of your first issue." Raymond Pearl, Md.

"Best wishes. Well started. Should reach everybody because everybody needs it. Enclosed $1.00." Dr. Nicholas A. Karpoty, California.

"I want no discount. I am anxious for your journal to succeed. I'm sending you separately my own plea for science: 'Bible in the Public Schools'." M. Mark, Indiana.

"One of my friends sent me your magazine EVOLUTION and I am highly elated with its policy and inclose my dollar." Henry Gerber, New York.

"I like your magazine very much. The first number is quite striking." Adeline F. Schively, New Mexico.

"Best wishes for your success. It's a good thing. Enclosed $2.00." Marcus Dezee, New York.

"Kindly send twenty copies of EVOLUTION *every month*. We will boost your publication as much as possible, as our labor organizations are also interested in spreading the evolution idea." Max Hahne, Naturfreunde, New York.

"I wish that you send me 20 more. The first 20 were sold faster than I thought." J. Berger, Wisconsin.

"I wish you all success in your work against obscurantism. It requires uncompromising and fearless fighting all along the line." James F. Morton, New Jersey.

"Mighty glad to have a copy of EVOLUTION. I read it through last night and like it fine. You ought to have a million readers, and I predict you will get them, as the magaine has a popular appeal and is needed." Guy Lockwood, Michigan.

"As a hobo who is more or less literate I have come across your delectable magazine. It literally knocks the metaphysical props from under our fundamentalists. Go to it old boy, and construct a real scientific, and yet sarcastic and humorous classic. Watch the sky-pilots jump at your venture. But let them gyrate and howl. You are destined to acquire a vast audience. Wish you luck." Daniel F. O'Brien, New York.

WHAT OF IT?

I see no use evading
The charge of monkey blood;
Is it less degrading
To say we sprang from MUD?

—BOB LYLE.

"The first issue, in the light of what it is attempting to do, is excellent. I only hope it will reach the fundamentalists, but more than that, will reach many of those still on the fence and convert them to the evolutionary point of view." V. F. Calverton, Maryland.

"I like your little periodical. Your lineup of contributors suits me immensely. Enclose check for $3.75." Herbert English, California.

"Your first number pleases me very much. You have started a publication of a kind which has seemed very greatly needed. I wish very deeply for the success of your undertaking. Enclose check for $5.00." A. H. Candee, New York.

"Send me ten more copies. I'll put EVOLUTION in my rack alongside 'True Story' and give my customers an opportunity to practice natural selection." Ben Bavly, Michigan.

"You have a galaxy of contributors whose writings all thinking people should read." J. Arthur Eddy, Colorado.

"The magazine is small, but contains more worthwhile reading matter than many another magazine four times as large. The undertaking is wise and timely and I firmly believe that this journal will soon be a real menace to the fundamentalist movement. It deserves the support of every freethinking man and woman." J. Koenig, New Jersey.

"I enclose check for twenty subscriptions to EVOLUTION to be sent to my address. I don't want my name mentioned. The copies subscribed for will be sold at the Unitarian Church here." A friend from California.

"Despicable. Obscene. Unspeakably vile. It ought to be suppressed." A lady who called at our office but refused to tell her name.

"The magazine is well balanced and covers many angles of the question. The cover is calculated to infuriate the rabid apostles of fundamentalism It is an excellent photo of a male gorilla and bears the scientifically correct caption, 'Man's Blood Cousin—The Gorilla.' Such a magazine certainly deserves broad support from those who perceive the growing menace of legislation placed upon the statute books by the ignoramuses of the bible belt." H. M. Wicks, in The Daily Worker, New York.

"I must refuse to write for a publication with such a provocative title as EVOLUTION." (In interview) Ben C. Gruenberg, New York.

"Good for you, old scout. Count me in." Bruce Rogers, New York.

Honor Roll

THE following friends constitute the EVOLUTION Honor Roll for this month, having paid for the number of subscriptions indicated since last report. If the splendid example set by these friends of academic freedom is followed generally by our readers EVOLUTION will soon be a power in the land. Will you join this goodly band by sending in at least three new subscribers THIS month?

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HERE are the EVOLUTION BROADCASTERS for this month. Each one of these supporters has contributed to our Broadcasting Fund. This made possible the sending of several thousand samples of our first issue to prospective readers.

Every month we want to broadcast at least 5,000 copies to secure new readers. It costs about 5 cents a copy to do this. Since EVOLUTION has very little capital, we ask our friends to help with this work. Samples will be mailed to at least twenty addresses for every dollar received for our Broadcasting Fund.

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Patent Attorney
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Los Angeles, Calif.

THOU SHALT NOT

growled some old mossback in the trees, when our most venturesome ancestor first tried to stand on his hind legs and raise his gaze toward the stars.

Thou shalt not eat of the tree of knowledge has been the command of fundamentalism down all the ages. Thou Shalt Not—to Newton weighing worlds,—to Copernicus measuring universes. Thou Shalt Not—to Galileo,—to Harvey,—to Darwin deciphering the book of nature with infinite care.

And Thou Shalt Not is the fundamentalist command today to every earnest student, to every courageous teacher of facts. Militant and rampant, fundamentalism wants to make this

THE LAW OF THE LAND

as it is already in Mississippi and Tennessee.

Had science in the past obeyed the fundamentalist command, the pall of the Dark Ages would still smother the world and modern civilization would have remained a dream undreamt. Neither shall we tamely submit to the menace of fundamentalism today.

EVOLUTION has been established to take up this challenge of superstition and bigotry and boldly raise the slogan of science

THOU SHALT

eat of the tree of knowledge. Let our youth be taught to face the facts, ALL the facts, that science has discovered, unashamed and unafraid. Let them be trained to transmit the facts of science to posterity in ever increasing measure. Your co-operation in this effort is invited. Put your name and address on the convenient blank below and if possible add a couple of others.

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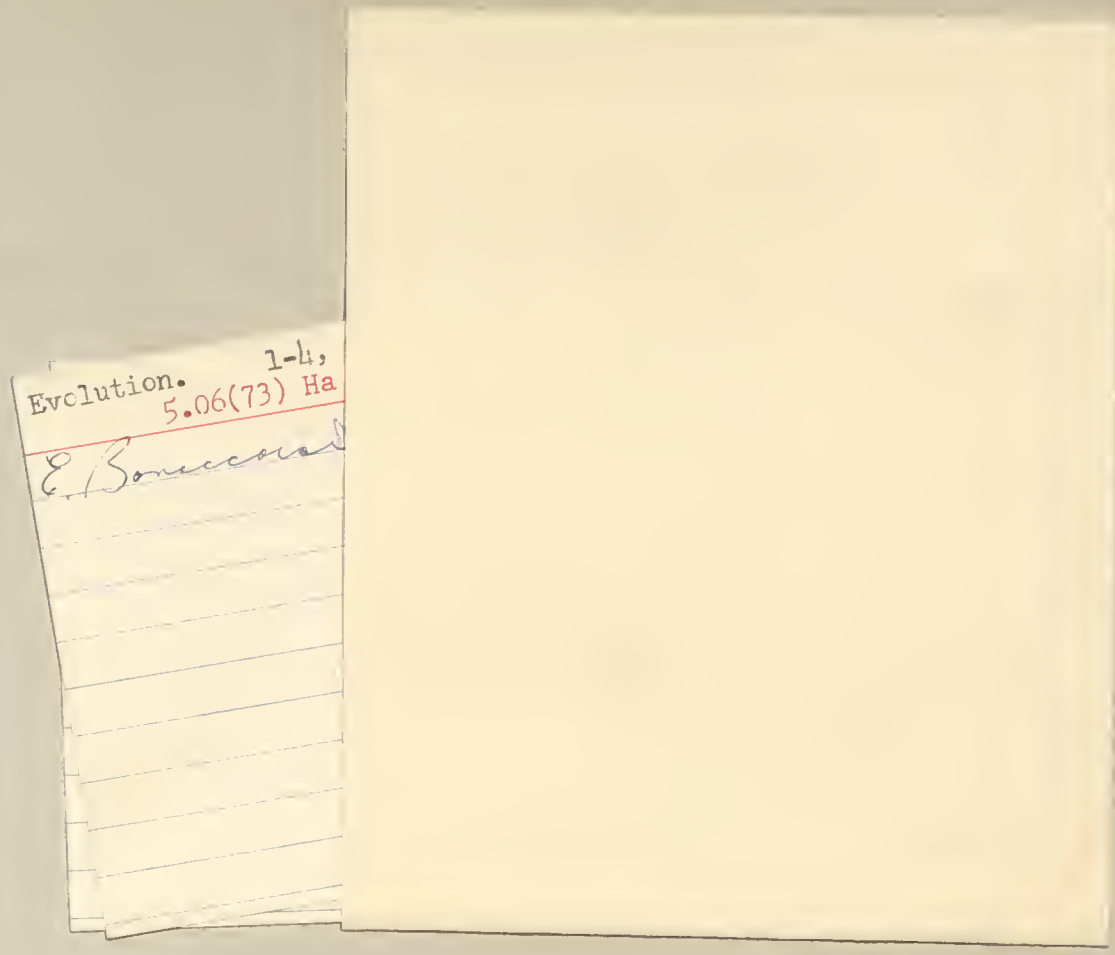

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